

## **AMENDMENTS TO THE CLAIMS**

The following claim set replaces all prior versions, and listings, of claims in the application:

1. (Previously Presented) A process for producing a self-cross-linked alkyl cellulose, which comprises irradiating, with radioactive rays, a mixture of 100 parts by weight of an alkyl cellulose wherein the alkyl group has 1 to 3 carbon atoms, and at least a part of the alkyl group is substituted by a carboxyl group, and wherein the carboxyl group may be in the form of a salt, and 5 to 2,000 parts by weight of water.
2. (Previously Presented) A process for producing a self-cross-linked alkyl cellulose, according to claim 1, wherein the alkyl cellulose is carboxyalkyl cellulose, hydroxyalkyl cellulose, or alkyl cellulose, having at least one carboxyl group per glucose unit of the alkyl cellulose, or a mixture of these alkyl celluloses.
3. (Previously Presented) A process for producing a self-cross-linked alkyl cellulose, according to claim 1, wherein 20% or more of the entirety of carboxyl groups of the alkyl cellulose is in the form of an alkali metal salt, an ammonium salt, or an amine salt.
4. (Previously Presented) A process for producing a self-cross-linked alkyl cellulose, according to claim 2, wherein the alkyl cellulose has an average polymerization degree of 10 to 2,000 and an average etherification degree of 0.5 or more.
5. (Previously Presented) A process for producing a self-cross-linked alkyl cellulose, according to claim 1, wherein the self-cross-linked alkyl cellulose has a gel fraction of 0.1% or more.
6. (Previously Presented) A process for producing a self-cross-linked alkyl cellulose, according to claim 1, wherein the dose of radioactive rays is 0.1 kGy or more.
7. (Previously Presented) A process for producing a self-cross-linked alkyl cellulose, according to claim 1, which further comprises drying the self-cross-linked cellulose.
8. (Canceled)

9. (Currently Amended) A self-cross-linked alkyl cellulose ~~according to claim 8~~ which is the reaction product of a radioactive ray-irradiated mixture of 100 parts by weight of an alkyl cellulose wherein the alkyl group has 1 to 3 carbon atoms, and at least a part of the alkyl group is substituted by a carboxyl group, and wherein the carboxyl group may be in the form of a salt, and 5 to 2,000 parts by weight of water, and wherein, when 0.2 g of the dried self-cross-linked alkyl cellulose is added to 10 ml of a buffered aqueous acetic acid solution having a pH of 4.5 containing 0.5 wt.% of cellulase and the resultant solution is allowed to stand at 40°C for eight hours, the percent biodegradation of the self-cross-linked alkyl cellulose is 50% or more.
10. (Previously Presented) A self-cross-linked alkyl cellulose according to claim 9, wherein the percent biodegradation is 70% or more.
11. (Currently Amended) A self-cross-linked alkyl cellulose according to ~~claim 8~~ claim 9, wherein the self-cross-linked alkyl cellulose absorbs 30 time or more its weight of distilled water.
12. (Currently Amended) A self-cross-linked alkyl cellulose according to ~~claim 8~~ claim 9, in the form of a gel having a compressive strength of 100 g/cm<sup>2</sup> or more.
13. (Canceled)
14. (Canceled)
15. (Canceled)
16. (Previously Presented) A process for producing a self-cross-linked alkyl cellulose, which comprises irradiating, with radioactive rays, a mixture of 100 parts by weight of an alkyl cellulose wherein the alkyl group has 1 to 3 carbon atoms, and is substituted by a carboxyl group, and wherein the carboxyl group may be in the form of a salt, and 5 to 2,000 parts by weight of water so as to produce a self-cross-linked alkyl cellulose having a gel fraction of 0.1 to 30%, wherein the self-cross-linked alkyl cellulose, after drying, absorbs 20 times or more its weight in water.
17. (Previously Presented) A process for producing a self-cross-linked alkyl cellulose, which comprises irradiating, with radioactive rays, a mixture of 100 parts by weight of an alkyl cellulose wherein the alkyl group has 1 to 3 carbon atoms, and is substituted by a carboxyl

group, and wherein the carboxyl group may be in the form of a salt, and 5 to 2,000 parts by weight of water so as to produce a self-cross-linked alkyl cellulose having a gel fraction of 30% or more and a compressive strength of 100 g/cm<sup>2</sup> or more.

18. (Previously Presented) A process according to claim 16 or 17, wherein the alkyl cellulose is carboxyalkyl cellulose having at least one carboxyl group per glucose unit thereof.

19. (Previously Presented) A process according to claim 16 or 17, wherein 20% or more of the entirety of carboxyl groups of the alkyl cellulose is in the form of an alkali metal salt, an ammonium salt, or an amine salt.

20. (Previously Presented) A process according to claim 16 or 17, wherein the alkyl cellulose has an average polymerization degree of 10 to 2,000 and an average etherification degree of 0.5 or more.

21. (Previously Presented) A process according to claim 16 or 17, wherein the self-cross-linked alkyl cellulose has a gel fraction of 0.1% or more.

22. (Canceled)

23. (Previously Presented) A self-cross-linked alkyl cellulose which is the reaction product of a radioactive ray-irradiated mixture of 100 parts by weight of an alkyl cellulose wherein the alkyl group has 1 to 3 carbon atoms, and is substituted by a carboxyl group, and wherein the carboxyl group may be in the form of a salt, and 5 to 2,000 parts by weight of water, wherein said self-cross-linked alkyl cellulose has a gel fraction of 0.1 to 30%, and when dried absorbs 20 times or more its weight in water, and wherein when 0.2 g of the dried self-cross-linked alkyl cellulose is added to 10 ml of a buffered aqueous acetic acid solution having a pH of 4.5 containing 0.5 wt.% of cellulase and the resultant solution is allowed to stand at 40°C for eight hours, the percent biodegradation of the self-cross-linked alkyl cellulose is 70% or more.

24. (Canceled)

25. (Canceled)

26. (Previously Presented) A self-cross-linked alkyl cellulose according to claim 25 which is the reaction product of a radioactive ray-irradiated mixture of 100 parts by weight of an alkyl

cellulose wherein the alkyl group has 1 to 3 carbon atoms, and is substituted by a carboxyl group, and wherein the carboxyl group may be in the form of a salt, and 5 to 2,000 parts by weight of water, wherein said self-cross-linked alkyl cellulose has a gel fraction of 30% or more and a compressive strength of 100 g/cm<sup>2</sup> or more, and wherein, when 0.2 g of the dried self-cross-linked alkyl cellulose is added to 10 ml of a buffered aqueous acetic acid solution having a pH of 4.5 containing 0.5 wt.% of cellulase and the resultant solution is allowed to stand at 40°C for eight hours, the percent biodegradation of the self-cross-linked alkyl cellulose is 50% or more.

27. (Canceled)

28. (Previously Presented) A process for producing a self-cross-linked alkyl cellulose, which comprises irradiating, with radioactive rays, a mixture of 100 parts by weight of an alkyl cellulose wherein the alkyl group has 1 to 3 carbon atoms, and may be substituted by a hydroxyl group, and 5 to 233 parts by weight of water.

29. (Previously Presented) A process for producing a self-cross-linked alkyl cellulose, according to claim 28, wherein the alkyl cellulose is hydroxyalkyl cellulose, alkyl cellulose having at least one hydroxyl group per glucose unit of the alkyl cellulose, or a mixture of these celluloses.

30. (Previously Presented) A process for producing a self-cross-linked alkyl cellulose, according to claim 29, wherein the alkyl cellulose has an average polymerization degree of 10 to 2,000 and an average etherification degree of 0.5 or more.

31. (Previously Presented) A process for producing a self-cross-linked alkyl cellulose, according to claim 28, wherein the self-cross-linked alkyl cellulose has a gel fraction of 0.1% or more.

32. (Previously Presented) A process for producing a self-cross-linked alkyl cellulose, according to claim 28, wherein the dose of radioactive rays is 0.1 kGy or more.

33. (Previously Presented) A process for producing a self-cross-linked alkyl cellulose, according to claim 28, which further comprises drying the self-cross-linked cellulose.

34. (Canceled)

35. (Currently Amended) A self-cross-linked alkyl cellulose ~~according to claim 34~~ which is the reaction product of a radioactive ray-irradiated mixture of 100 parts by weight of an alkyl cellulose wherein the alkyl group has 1 to 3 carbon atoms, and may be substituted by a hydroxyl group, and 5 to 233 parts by weight of water, and wherein, when 0.2 g of the dried self-cross-linked alkyl cellulose is added to 10 ml of a buffered aqueous acetic acid solution having a pH of 4.5 containing 0.5 wt.% of cellulase and the resultant solution is allowed to stand at 40°C for eight hours, the percent biodegradation of the self-cross-linked alkyl cellulose is 50% or more.

36. (Previously Presented) A self-cross-linked alkyl cellulose according to claim 35, wherein the percent biodegradation is 70% or more.

37. (Currently Amended) A self-cross-linked alkyl cellulose according to ~~claim 34~~ claim 35, wherein the self-cross-linked alkyl cellulose absorbs 30 times or more its weight of distilled water.

38. (Currently Amended) A self-cross-linked alkyl cellulose according to ~~claim 34~~ claim 35, in the form of a gel having a compressive strength of 100 g/cm<sup>2</sup> or more.

39. (Canceled)

40. (Previously Presented) A process for producing a self-cross-linked alkyl cellulose, which comprises irradiating, with radioactive rays, a mixture of 100 parts by weight of an alkyl cellulose wherein the alkyl group has 1 to 3 carbon atoms, and may be substituted by a hydroxyl group, and 5 to 233 parts by weight of water so as to produce a self-cross-linked alkyl cellulose having a gel fraction of 0.1 to 30%, wherein the self-cross-linked alkyl cellulose, after drying, absorbs 20 times or more its weight in water.

41. (Previously Presented) A process for producing a self-cross-linked alkyl cellulose, which comprises irradiating, with radioactive rays, a mixture of 100 parts by weight of an alkyl cellulose wherein the alkyl group has 1 to 3 carbon atoms, and may be substituted by a hydroxyl group, and 5 to 233 parts by weight of water so as to produce a self-cross-linked alkyl cellulose having a gel fraction of 30% or more and a compressive strength of 100 g/cm<sup>2</sup> or more.

42. (Previously Presented) A process according to claim 40 or 41, wherein the alkyl cellulose is hydroxyalkyl cellulose, or an alkyl cellulose having at least one hydroxyl group per glucose unit, or a mixture of these celluloses.

43. (Previously Presented) A process according to claim 40 or 41, wherein the alkyl cellulose has an average polymerization degree of 10 to 2,000 and an average etherification degree of 0.5 or more.

44. (Previously Presented) A process according to claim 40 or 41, wherein the self-cross-linked alkyl cellulose has a gel fraction of 0.1% or more.

45. (Canceled)

46. (NEW) A self-cross-linked alkyl cellulose ~~according to claim 45~~ which is the reaction product of a radioactive ray-irradiated mixture of 100 parts by weight of an alkyl cellulose wherein the alkyl group has 1 to 3 carbon atoms, and may be substituted by a hydroxyl group, and 5 to 233 parts by weight of water, and wherein, when 0.2 g of the dried self-cross-linked alkyl cellulose is added to 10 ml of a buffered aqueous acetic acid solution having a pH of 4.5 containing 0.5 wt.% of cellulase and the resultant solution is allowed to stand at 40°C for eight hours, the percent biodegradation of the self-cross-linked alkyl cellulose is 70% or more.

47. (Canceled)

48. (Canceled)

49. (Currently Amended) A self-cross-linked alkyl cellulose ~~according to claim 48~~ which is the reaction product of a radioactive ray-irradiated mixture of 100 parts by weight of an alkyl cellulose wherein the alkyl group has 1 to 3 carbon atoms, and may be substituted by a hydroxyl group, and 5 to 233 parts by weight of water, wherein the self-cross-linked alkyl cellulose has a gel fraction of 30% or more and a compressive strength of 100 g/cm<sup>2</sup> or more, and wherein, when 0.2 g of the dried self-cross-linked alkyl cellulose is added to 10 ml of a buffered aqueous acetic acid solution having a pH of 4.5 containing 0.5 wt.% of cellulase and the resultant solution is allowed to stand at 40°C for eight hours, the percent biodegradation of the self-cross-linked alkyl cellulose is 50% or more.

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50. (Canceled)